PAINTGUN SIGHT

FIELD OF INVENTION

The present invention relates to an electronic sight, more particularly to a sight of a paintgun that assists paintball players to aim at the shooting target.

BACKGROUND OF THE INVENTION

A paintgun is a major recreational tool for the popular "Survival Game" of paintball. The paintgun was originally used to mark and count domestic animals, and cowboys also used it to shoot at each other for fun in their leisure time. The paintball gradually becomes a game over a long period of time, and the number of participants is increased as time goes by. Up to now, this game is developed into a shooting sport. The structure of a paintgun uses the principle of an anesthesia gun, and also utilizes carbon dioxide or high pressure air as its power source. Although the paintgun has the name of a gun, its appearance and structure are totally different from those of a real gun. The structure of a paintgun can be roughly divided into a main shooting body, a butt, a barrel (guiding the projectile direction), a breech (loading the paintball and having the function same as the magazine of a riffle), and air bottle (power source), etc.

For a paintball game, the appearance of a general paintgun and the breech of the paintball are designed differently from those of a real gun. The external casing of a paintball is similar to the film of a pill capsule which wraps glycerol and eatable dye inside.

The caliber of a paintgun is approximately 0.68 inch (or 17.5mm), and thus is generally called "Point 68". Such caliber is commonly adopted throughout the world. Since the manufacturing technology is improved unceasingly, the population of paintball players is increased in multiples. At present, paintball becomes the third largest sport in the United States. In fact, the fun and fitness brought by the paintball game makes it so popular over the world.

A general sight used in toy guns usually includes a riffle scope and a front sight, etc, and a more advanced sight comes with a laser sight. The function of these components aims at improving the shooting accuracy, but as mentioned previously, the appearance and structure of a general paintgun are different from those of a real gun, since the way of loading paintballs is to put the paintballs into an agitator that is connected to the upper section of the main shooting body, and to drop the paintballs into the main shooting body through an agitator. Thus, the agitator becomes a standard component of most paintguns. Since such an agitator is located at the upper section of the paintgun, therefore it is unable to install a sight or a scope of a regular gun. When a player shoots, the player cannot aim with a sight to obtain a high shooting accuracy. As to the dot laser sights that intend to help players to aim at the target, it is hard to see the small light spot, particularly when the target is 50 yards away from the player, and thus is impractical for its application.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide an electronic sight installed to a paintgun for assisting paintball players to aim at the target.

The paintgun sight in accordance with this invention basically integrates an electronic camera and a liquid crystal display (LCD), wherein the lens of the electronic camera is located in front of the agitator for capturing the image of the target, and the liquid crystal display is located behind the agitator for displaying the image of the target captured by the electronic camera. Therefore, the aiming will not be blocked by the agitator on a regular paintgun.

Another objective of this invention is to provide a universal and easy-to-install paintgun sight.

Since the sight in accordance with this invention is equipped with a clamp for easily and quickly mounting the sight above the paintball loading inlet of the paintgun. The structure of the clamp includes a hoop and a pressing member, such that the hoop can be mounted onto the paintball loading inlet, and the pressing member can press the hoop tightly onto the paintball loading inlet. Such structure provides users an easy and quick way to mount or remove the sight.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying

drawings, in which:

FIG. 1 is a perspective diagram of the overall appearance of a paintgun with a sight according to a prior art.

FIG. 2 is a perspective diagram of the sight according to the present invention when the hoop of the clamp is in the open state.

FIG. 3 is a perspective diagram of the sight according to the present invention when the hoop of the clamp is in the close state.

FIG. 4 is a cross-sectional diagram of the connecting mechanism according to the present invention.

FIG. 5 is a cross-sectional diagram of the connecting mechanism according to the present invention when the pressing member is used to press the paintball loading inlet.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, the basic structure of a traditional paintgun includes a main shooting body 10 (including the gun parts which is not shown in the figure), a gun butt 11 (or handle), a barrel 12 installed at the front of the main shooting body 10, an agitator 13, and an air bottle 14; wherein a paintball loading inlet 15 is disposed at upper section of the main shooting body 10, and the paintballs are dropped from the agitator 13 above the main shooting body 10 into a gun section of the main shooting body 10 through the paintball loading inlet 15. Further, with the propellant of a high pressure air of the air bottle 15, the paintballs are shot out from the barrel 12. Therefore, the paintball loading inlet 15 is a standard

equipment of most paintguns; on the other hand, after the agitator 13 for accommodating paintballs inserts its paintball supply pipe 130 into the paintball loading inlet 13, the screw thread 150 of the paintball loading inlet 13 is used to mount the paintball supply pipe onto the paintball loading inlet 13 of the main shooting body 10. Therefore, the paintball loading inlet 15 and the agitator 13 will block the vision of the shooter, and thus cannot aim at the target.

Refer to FIGS. 2, and 3 for the sight 20 of the paintgun according to this invention, comprising:

a clamp 30, for being quickly clamped onto the paintball loading inlet 15 of the paintgun;

an electronic camera 40, coupled to one side of the clamp 30 for capturing the image of a target and converting the image into an electronic output signal; and

a liquid crystal display, coupled to another side of the clamp 30 for outputting the electronic output signal and displaying the captured image of a target object; wherein the electronic camera is an electronic photography equipment including an image detector 42 (such as a charged couple device array, CCD array) and a corresponding image processing circuit 43, and the image processing circuit 43 converts and outputs the optical image detected by the image detector 42 into the corresponding electronic signal; and the liquid crystal display 50 is a general LCD display which is electrically coupled to the image processing circuit 43 by an electric wire and then display the captured image of the target

object according to the electronic signal outputted from the electronic camera 40 for the player's visual observation and viewing.

To implement the technology of the foregoing electronic camera 40 and the liquid crystal display 50, it is very similar to the digital camera, wherein the image detector 42 can adopt a color image detector or a gray-scale image detector for capturing the image of a target object. These related technologies are well known to the persons skilled in the art and can be implemented with no problem at all.

The foregoing clamp 30 is the key component of this invention, and its main function is to install the entire sight 20 onto the paintball loading inlet 15 above the main shooting body 10 easily and quickly. The structure of the clamp 30 comprises a hoop and a pressing member, wherein the hoop is a component that can surround the periphery of the paintball loading inlet 15, and the hoop used in the embodiment of this invention comprises a first member 31 and a second member 32, and the first member 31 has a cross-sectional area substantially in the shape of an open ring (refer to FIG. 4) and the first member 31 comprises three consecutively connected sides, which are a first side 311, and a second side 312 and a third side 313 located on both sides of the first side 311, such that the electronic camera 40 and the liquid crystal display 50 are disposed respectively on the corresponding second side 312 and third side 313, and the paintball loading inlet 15 is surrounded by

these three sides 311, 312, 313; wherein the first side 311 comprises an arc or semicircular surface facing a side of the paintball loading inlet to match the first side 311 with the shape of the paintball loading inlet; a second member 32 pivotally coupled to the second side 312 by a pivotal axis 33, which has a first hook member 34 disposed on another side of a pivotal axis 33, and the function of this hook member 34 is similar to a door to the first member 31, thereby defining or destroying a close ring structure with the first member 31. The third side 313 of the first member 31 has a lock assembly, and such lock member comprises a movable member 351 and a second hook 352 disposed on the movable member 351. Under normal condition, the movable member 351 is maintained in a locked position by an elastic member 353 (such as a compressed spring). After the first member 31 of the hoop surrounds the paintball loading inlet 15, the first hook 34 of the second member 32 is pushed towards the second hook 352, so that the second hook 352 and the movable member 351 are forced to move downward (as shown in the arrowhead in dotted line), and under the pushing of the elastic member 353, when the movable member 351 recovers its normal locked position, the first hook 34 and the second hook 352 are hooked mutually. Then, the first member 31 and the second member 32 will constitute a close ring structure as shown in FIG. 4 to tightly hoop the paintball loading inlet 15. Basically, the pressing member comprises a screw bolt 361 being screwed to the

second member 32 and a spacer 362 being installed at the front end of the axial direction of the screw bolt 361. By means of rotating the screw bolt 361, the spacer 362 is pushed towards the paintball loading inlet 15 to further drive the spacer 361 to tightly clamp the paintball loading inlet (see FIG. 5).

In FIG. 4, the first member 31 also has a bracket 37 being embedded into one side facing the first member 31, and the bracket 37 is a component of an elastic thin plate, which could be made by metals or plastic materials. Both ends of this bracket 37 respectively prop the surfaces of the second side 312 and the third side 313. To prevent it from being loosened or fallen out, a concave opening 38a, 38b is disposed respectively on the second side and the third side as shown in FIG. 4. Both ends of the bracket 37 respectively prop against these two openings 38a, 38b, so that after the first member 31 of the hoop hoops the paintball loading inlet 15, this bracket 37 jointly hoops the paintball loading inlet 15 with the spacer 362 of the pressing member. To avoid the slippery action between the bracket 37 and the paintball loading inlet 15, a slippery resisting pad 371 (such as a rubber pad or silicon pad) having a higher friction can be disposed on a side facing the paintball loading inlet 15. Therefore, users can quickly and easily install such electronic sight 20 onto the paintball loading inlet of the paintgun by means of the foregoing design.